Small
Business
Innovation
Research

Cryogenic Heat Transport System

Cullimore & Ring Technologies, Inc. - Littleton, CO
Swales and Associates, Inc. - Beltsville, MD

INNOVATION

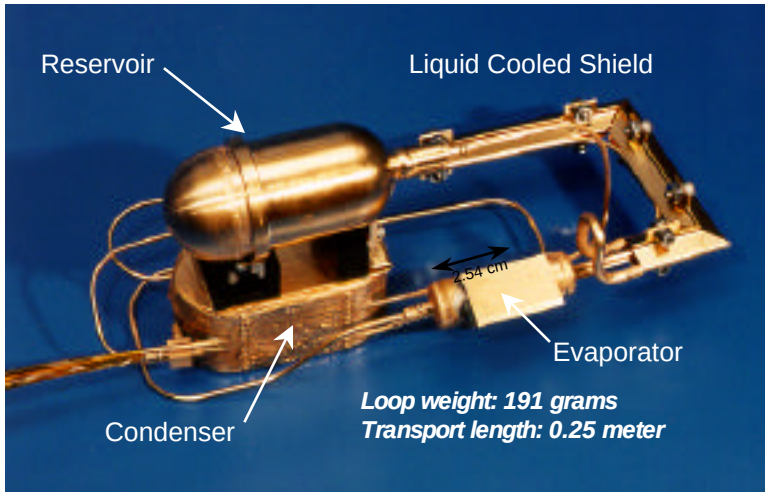
A vibration isolating cryogenic heat transport system capable of transporting waste heat from electronics and sensors over long distances with the use of no moving parts or thermal switches.

ACCOMPLISHMENTS

- The technology successfully operated at 80-90°K during ground tests and in the zero gravity CRYOTSU canister on board STS-95
- Testing successfully demonstrated acquisition of waste heat through the vaporization of a working fluid which is passively pumped using the surface tension forces developed in a fine porous wick structure
- Extrapolated the development of similar room temperature technology to cryogenic applications
- Characterized operation for an 80-90°K system using nitrogen as the working fluid. Spin off development demonstrated functionality down to 40°K using neon.

COMMERCIALIZATION

- Miniaturization of loop components has provided the ground work for extrapolating the technology to room temperature electronic cooling



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GOVERNMENT/SCIENCE APPLICATIONS

- Vibration free cooling of cryogenic sensors and electronics
- Method for connecting multiple cryogenic cooling sources to a single heat source
- Lightweight, flexible, vibration free replacement for cryogenic thermal switches

Goddard Space Flight Center

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